WHAT IS CLAIMED IS

1. A method for remotely measuring the surface temperature of a silicon wafer heated to a set temperature, comprising:

a. providing a blackbody source configured to be heated to a required blackbody temperature,

b. varying said blackbody temperature in discrete steps through a given temperature interval,

c. for each said blackbody temperature, obtaining two orthogonally polarized images of an area on the silicon wafer using radiation of an appropriate wavelength reflected from the silicon wafer, and

d. obtaining a null polar level from said two orthogonally polarized images, said null polar level being indicative of the silicon wafer surface temperature, whereby the surface temperature is determined without the need to know the surface emissivity.

2. The method of claim 1, wherein said step of varying said blackbody temperature in discrete steps through a given temperature interval includes the substep of varying said blackbody temperature at a rapid rate typical of RTP processes.

3. The method of claim 2, wherein said substep of varying said blackbody temperature in discrete steps through a given temperature interval at a rapid rate typical of RTP processes further includes providing a first circularly variable neutral density filter inserted between said blackbody source and the silicon wafer, holding said blackbody source at a constant temperature, and orienting said first circularly variable neutral density filter in different angular orientations in order to attenuate the radiation of said blackbody source by known amounts.

4. The method of claim 1, wherein said step of providing a blackbody source configured to be heated to a required blackbody temperature includes providing a variable intensity diode laser source and a second circularly variable neutral density filter used to modulate said laser radiation.

5. The method of claim 1, wherein said step of obtaining a null polar level from said two orthogonally polarized images further includes setting the silicon surface temperature to a set temperature.

6. The method of claim 1, wherein said appropriate wavelength is centered around 1 μm.

7. The method of claim 1, wherein said appropriate wavelength is centered around 16μm.

8. A system for the remote measurement of the surface temperature of a silicon wafer heated to a set temperature, comprising:

a. a blackbody source configured to be heated at a required rate to a required blackbody temperature, said blackbody source emitting blackbody radiation that impinges upon the silicon wafer at a given impingement angle,

b. imaging means for receiving radiation reflected from the silicon wafer surface at an angle identical with said impingement angle,

c. a linear polarizer inserted in an optical path between said imaging means and the silicon wafer, said polarizer polarizing said reflected radiation and facilitating the formation of pairs of orthogonally polarized images in said imaging means,

d. a narrow band filter centered at an appropriate wavelength and inserted in said optical path between said imaging means and the silicon wafer, and

e. means for calculating polar levels based on said pairs of orthogonally polarized images and for obtaining a null level of said polar levels, whereby the silicon surface temperature is obtained from said null level without a need to measure the silicon surface emissivity.

9. The system of claim 8, wherein said blackbody source configured to be heated at a required rate to a required blackbody temperature further includes a first circularly variable neutral density filter inserted between said blackbody source and the silicon wafer.

10. The system of claim 8, wherein said blackbody source includes a variable intensity diode laser source emitting laser radiation at an appropriate wavelength, and a second circularly variable neutral density filter used to modulate said laser radiation.

11. The system of claim 8, wherein said appropriate wavelength is centered around 1μm.

12. The system of claim 8, wherein said appropriate wavelength is centered around 16μm.